

### Patent Claims

1. A DNA molecule corresponding to a nucleotide sequence selected from a group consisting of SEQ ID NO 1, SEQ ID NO 3 and SEQ ID NO 5.  
5
2. A DNA molecule comprising a nucleotide sequence according to Claim 1, commencing with position 70, which encodes for a polypeptide having the properties of the major allergen Phl p 4 from *Phleum pratense*.  
10
3. A DNA molecule corresponding to a nucleotide sequence which encodes for the major allergen Phl p 4 from *Phleum pratense*.
4. A DNA molecule which hybridises with a DNA molecule according to one or more of Claims 1 to 3 under stringent conditions and originates from DNA sequences of *Poaceae* species.  
15
5. A DNA molecule encoding for a polypeptide which cross-reacts immunologically with the major allergen Phl p 4 from *Phleum pratense* and originates from DNA sequences of *Poaceae* species.  
20
6. A DNA molecule corresponding to a partial sequence or a combination of partial sequences according to one or more of Claims 1 to 5 which encodes for an immunomodulatory, T-cell-reactive fragment of a group 4 *Poaceae* allergen.  
25
7. A DNA molecule according to Claim 6, encoding for a Phl p 4 fragment selected from a group consisting of  
30
  - fragment 1-200, with amino acids 1-200 of Phl p 4,
  - fragment 185-500, with amino acids 185-500 of Phl p 4.

- 5 8. A DNA molecule corresponding to a nucleotide sequence according to one or more of Claims 1 to 7, encoding for an immunomodulatory T-cell-reactive fragment, characterised in that the said nucleotide sequence has been specifically modified by specific mutation of individual codons, elimination or addition.
- 10 9. A DNA molecule according to Claim 8, characterised in that the said mutation results in the replacement of one, more or all cysteines of the corresponding polypeptide with another amino acid.
10. A recombinant DNA expression vector or a cloning system comprising a DNA molecule according to one or more of Claims 1 to 9, functionally linked to an expression control sequence.
- 15 11. A host organism transformed with a DNA molecule according to one or more of Claims 1 to 9 or an expression vector according to Claim 10.
- 20 12. A process for the preparation of a polypeptide encoded by a DNA sequence according to one or more of Claims 1 to 9 by cultivation of a host organism according to Claim 11 and isolation of the corresponding polypeptide from the culture.
- 25 13. A polypeptide which is encoded by a DNA sequence according to one or more of Claims 1 to 9.
14. A polypeptide according to Claim 13 as medicament.
- 30 15. A pharmaceutical composition comprising at least one polypeptide according to Claim 14 and optionally further active ingredients and/or adjuvants for the diagnosis and/or treatment of allergies in the triggering of which group 4 allergens of the *Poaceae* are involved.

16. Use of at least one polypeptide according to Claim 14 for the preparation of a medicament for the diagnosis and/or treatment of allergies in the triggering of which group 4 allergens of the *Poaceae* are involved and/or for the prevention of such allergies.

5

17. A DNA molecule according to one or more of Claims 1 to 9 as medicament.

18. A recombinant expression vector according to Claim 10 as medicament.

10

19. A pharmaceutical composition comprising at least one DNA molecule according to Claim 17 or at least one expression vector according to Claim 18 and optionally further active ingredients and/or adjuvants for immunotherapeutic DNA vaccination of patients having allergies in the triggering of which group 4 allergens of the *Poaceae* are involved and/or for the prevention of such allergies.

15

20. Use of at least one DNA molecule according to Claim 17 or at least one expression vector according to Claim 18 for the preparation of a medicament for immunotherapeutic DNA vaccination of patients having allergies in the triggering of which group 4 allergens of the *Poaceae* are involved and/or for the prevention of such allergies.

20

25

30